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RENNER, OTTO, BOISSELLE & SKLAR, LLP (AMDS)
1621 EUCLID AVE - 19TH FLOOR
CLEVELAND, OH 44115-2191

EXAMINER	
TRAN, KHANH C	

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/814,590	GARG ET AL.	
	Examiner	Art Unit	
	Khanh Tran	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2, 5, 11-14, and 15-16* is/are rejected.

7)☒ Claim(s) *3,4,6-10 and 17-20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 9 is objected to because of the following informalities: in line 4, "complex" should be deleted. Appropriate correction is required.

2. Claim 19 is objected to because of the following informalities: in line 4, "complex" should be deleted. Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-2 and 5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 7 of U.S. Patent No. 6,535,073 in view of Booth U.S. Patent 6,650,711 B1.

Regarding claim 1,

In regard to the claimed limitation (a) of the pending Patent application "*a mapper generating a first data signal at a selected one of a plurality of baud rates*". Claim 7 of the US patent discloses (a) a mapper generating a first channel data signal and a second channel data signal, both at first data value frequency. As disclosed in column 2 lines 53-56 of the US patent, the first channel data signal and the second channel data signal are an I-channel data signal and a Q-channel data signal respectively, which later on are claimed in claim 2 of the pending Patent application. The complex signal containing the first channel data signal and the second channel data signal, claimed in the US patent, is representative of the first data signal as claimed in the pending Patent application. Further evidence in the claim discloses that the first channel data signal and the second channel data signal are at a first data value frequency. Although the conflicting features are not identical, they are not patently distinct from each other because the claimed features in the pending application merely broaden the scope of the features in the US Patent. In light of that, the claimed features in the pending application are merely an obvious variation of those in the US patent.

In regard to the claimed limitation (c) of the pending Patent application "*a complex mixer for generating a frequency shifting scaled data signal*". Claim 7 of the US patent discloses (b) a complex mixer for generating frequency shifting first channel data signal and frequency shifting second channel data signal. The claimed features in the US patent disclose more details, which later on are claimed in claim 5 of the pending Patent application. Using analogous reasoning as discussed above, although the conflicting features are not identical, they are not patently distinct from each other

because the claimed features in the pending application merely broaden the scope of the features in the US Patent. In light of that, the claimed features in the pending application are merely an obvious variation of those in the US patent.

In regard to the claimed limitation (d) of the pending Patent application "*an upsampler circuit for increasing the sampling frequency of the frequency shifted scaled data signal*". Claim 7 of the US patent discloses (c) an upsampling device to increase the first data value frequency of a result of the first channel summer and a result of the second channel summer. As discussed above, the first channel data signal and the second channel data signal, claimed in the US patent, are representative of the first data signal as claimed in the pending Patent application. Using analogous reasoning as discussed above, although the conflicting features are not identical, they are not patently distinct from each other because the claimed features in the pending application merely broaden the scope of the features in the US Patent. In light of that, the claimed features in the pending application are merely an obvious variation of those in the US patent.

In regard to the claimed limitation (e) of the pending Patent application "*a pulse shaper circuit for generating a digital representation of a modulated carrier signal in accordance with the frequency shifted scaled data signal*". Claim 7 of the US patent discloses (d) a finite impulse response filter operating on the first channel data signal and the second channel data signal respectively. As disclosed in column 7 lines 3-10, also see figure 4 of the US patent, the finite impulse response filter comprises an I-channel pulse shaper 60(I) and a Q-channel pulse shaper 60(Q), which are equivalent

to the pulse shaper circuit as claimed in the pending Patent application. Using analogous reasoning as discussed above, although the conflicting features are not identical, they are not patently distinct from each other because the claimed features in the pending application merely broaden the scope of the features in the US Patent. In light of that, the claimed features in the pending application are merely an obvious variation of those in the US patent.

However, claim 7 of the US patent does not disclose a scaler located between a mapper and a complex mixer for multiplying the first data signal by one of a plurality of predetermined scaler values to generate a scaled data signal as set forth in the claimed patent application. Nevertheless, Booth teaches utilization of a scaler for scaling the information signal generated by a mapper, in another US 6,650,711 B1 patent. In column 4 lines 36 through column 5 line 19, figure 3 of Booth invention includes a scaler 31 for scaling the information signal generated by a mapper 10 by a predetermined scaling factor. The scaled I-channel data signal and scaled Q-channel data signal are subsequently frequency shifted by a complex mixer 33. Hence, Booth (US 6,650,711 B1) teaches in the same field of endeavor that a scaler is utilized between the mapper and complex mixer for scaling the information signal before frequency shifting the scaled information signal. In view of Booth teachings, it would have been obvious for one of ordinary skill in the art at the time the invention was made that the device in the US patent can be modified to include a scaler positioned between the mapper and the complex mixer for scaling the scaling the information signal before frequency shifting.

Hence, all claimed features in the pending application are an obvious variation of the claimed features of the US patent in view of Booth teachings.

Regarding claim 2, claim 2 of the pending Patent application claims the first signal comprises an I-channel first data signal and a Q-channel first data signal, which are already discussed in the rejection for claim 1.

Regarding claim 5, claim 5 of the pending Patent application claims details of the complex mixer, which are very similar to the complex mixer of claim 7 in the US patent.

4. Claims 11-12 and 15-16 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 10 of U.S. Patent No. 6,535,073 in view of Booth U.S. Patent 6,650,711 B1.

Regarding claims 11-12 and 15-16, said claims in the pending patent application claim a method for performing the steps of claims 1-2 and 5 as discussed in the rejection above. Therefore, claims 11-12 and 15-16 are rejected on the same ground as for claims 1-2 and 5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koslov et al. U.S. Patent 5,978,420 in view of Miller et al. U.S. Patent 5,621,762.

Regarding claim 11, Koslov et al. invention is directed to methods and apparatus for directly synthesizing a signal, a digital signal, on a carrier signal. As shown in figure 4, see column 4 line 51 through column 5 line 38, Koslov et al. discloses a modulator 100 including:

- a symbol mapping circuit 102, wherein the mapping circuit 102 generates in-phase (I) and quadrature (Q) phase signals. The in-phase (I) and quadrature (Q) phase signals are representative of the claimed first data signal. Koslov et al. does not disclose the in-phase (I) and quadrature (Q) phase signals are generated at selected one of a plurality of baud rates. However, the generation of the in-phase (I) and quadrature (Q) phase signals is at a predetermined baud rate as appreciated by one of ordinary skill in the art;
- a complex mixer 106 for mixing the in-phase (I) and quadrature (Q) phase signals to generate frequency shifted data signals;
- an interpolator 115 for increasing the frequency of the frequency shifted data signals;
- a bandpass filter 117 for filtering the frequency shifted data signals to generate a digital representation of the modulated carrier signal.

Koslov et al. does not disclose that the in-phase (I) and quadrature (Q) phase signals are scaled by one of a plurality of predetermined scaler values to correspond to the baud rate to generate a scaled signal. As shown in figure 3, Miller et al. discloses a communication device 300 including a digital modulator 301, see figure 4. In column 4 lines 45-64, the digital modulator 301 comprises a symbol mapper 404 for generating In-phase (I) and Quadrature (Q) components. The I and Q components are then dynamically scaled via the symbol scaling portion 406 of the peak suppression algorithm block 402. The scaling of the I and Q components of the data symbols is in anticipation of the filtering action that takes place via pulse shape filter 408. By scaling the I and Q components of the data symbols, the magnitude of the signal peaks is minimized, thereby reducing the peak power demand. Miller et al. teaches, in the same field of endeavor, the application of scaling the I and Q components generated by symbol mapper 404 before the filtering action taken. Since scaling the I and Q components would apply to Koslo et al. modulator 10 and would not have any effect on the principle operation of Koslo et al. invention, it would have been obvious for one of ordinary skill in the art at the time the invention was made that Koslo et al. modulator 10 can be modified to include the symbol scaling portion 406 of the peak suppression algorithm block 402 as taught by Miller et al.. Furthermore, since scaling the I and Q components to minimize the magnitude of the signal peaks, the selected scaling value would correspond to the baud rate generated by the symbol mapper as appreciated by one of ordinary skill in the art.

Regarding claim 12, as discussed in claim 11, the in-phase (I) and quadrature (Q) phase signals, generated by symbol mapper 102 as taught by Koslov et al. are representative of the first data signal as claimed in the pending application. The scaling as taught by Miller et al. scales the I and Q components. The complex mixer in Koslov et al. invention performs the mixing on the I and Q components.

Regarding claim 13, Koslov et al. and Miller et al. do not disclose mapper generating data signal with sampling frequency corresponding to the highest baud rate as claimed in the pending application. Because transmission of data is normally at highest throughput as possible, one of ordinary skill in the art would have been motivated to generate I and Q components at sampling frequency corresponding to the highest baud rate.

Regarding claim 14, as expressly disclosed by Miller et al., see column 4 lines 45-64, the scaling of the I and Q components of data symbols aim at minimizing the magnitude of the signal peaks, hence reducing the peak power demand on the amplifier. Hence, the scaling only affects the amplitude of scaled signal, and is independent of the baud rate. As known in the art of data transmission, the transmitter maintains the transmitted signal at some optimum constant level, therefore, it would have been obvious for one of ordinary skill in the art that the scaling values of the peak suppression algorithm can be selected in such a way that each of scaling values would provide for the I and Q components to have approximately the same signal strength.

Allowable Subject Matter

6. Claims 3-4, 6-10, and 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Koslov U.S. Patent 6,236,283 discloses "Methods and Apparatus for Generating a Filtered Signal Having a Fixed Sampling Rate from a Variable Baud Rate Input Data Stream".

O'Dea et al. U.S. Patent 5,805,640 discloses Method and Apparatus for Conditioning Modulated Signals for Digital Communications".

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Tuesday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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